

What is claimed is:

1. A device for retaining filling material in place during the filling or repair of a cavity, the dam device comprising:
  - a straddle extending transversely between and connecting a pair of
  - generally parallel arms,
  - each arm comprising a proximal end connected to the straddle and a distal end connected to an edge,
  - the wedges connected to the arms being generally oppositely directed towards each other,
  - the proximal ends of the arms each being connected to a leg,
  - a matrix band comprising two end loops, the matrix band being sized so that when each end loop receives one of the legs, the matrix band can be positioned so that matrix band extends from one of the legs, along one of the arms, around the wedges, along the other arm and to the other leg.
2. The device of claim 1 wherein the legs are extension of the straddle.
3. The device of claim 1 wherein the legs are generally perpendicular extension of the proximal ends of the arms.
4. The device of claim 1 wherein the matrix band is plastic or metal.
5. The device of claim 1 wherein a middle portion of the matrix band is attached to a pre-cured dental composite material.
6. The device of claim 1 wherein a middle portion of the matrix band has a profile that includes a lower edge that is thicker than an upper edge with a smooth tapered profile extending therebetween.
7. The device of claim 1 wherein each arm is connected to a tab that provides a gripping surface for engaging a tool for installing and removing the dam from a patient's mouth.

8. The device of claim 1 wherein each wedge is tapered and the arms and straddle bias the wedges toward each other so that when the dam is installed in a patient's mouth, the wedges can be frictionally inserted between the tooth under repair and a neighboring tooth.

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9. The device of claim 7 wherein each tab is disposed opposite its respective arm from one of the wedges.

10. A matrix band comprising two end loops, the matrix band being sized so that when each end loop receives one of the legs, the matrix band can be positioned so that matrix band extends from one of the legs, along one of the arms, around the wedges, along the other arm and to the other leg, wherein a middle portion of the matrix band is attached to a pre-cured dental composite material.

15. A matrix band comprising two end loops, the matrix band being sized so that when each end loop receives one of the legs, the matrix band can be positioned so that matrix band extends from one of the legs, along one of the arms, around the wedges, along the other arm and to the other leg, wherein the matrix band is formed of metal and has a lower edge that is thicker than an upper edge thereof.

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12. A method for repairing a molar comprising:  
removing a decayed portion of the molar;  
installing the device of claim 1 in the patient's mouth so that the wedges and matrix band are disposed between the molar under repair and a neighboring tooth with the matrix band disposed along and around the portion of the molar where the decayed portion has been removed;

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filling the area of the molar where the decayed portion has been removed with composite material and allowing the composite material to engage the matrix band and allowing the matrix band to contain the composite material within the molar;

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curing the composite material;  
removing the dam device.

13. The method of claim 12 wherein the wedges press the matrix band against the tooth to be filled/repaired and these wedges will provide separation of the tooth to be filled and the adjacent tooth.

5 14. The method of claim 10 further comprising polishing between the molar and neighboring tooth with a mechanical polishing device.

15. The method of claim 14 wherein the mechanical polishing device comprises:

10 two generally parallel and spaced apart prongs, each prong comprising a proximal end connected to a transmission assembly and a distal end connected to an end of a floss matrix band that extends between the distal ends of the prongs,

the transmission assembly being connected to the shaft, the shaft being connected to a motor for imparting rotation to the shaft about its longitudinal axis,

15 the transmission assembly comprising an input element connected to the shaft and that rotates with the shaft, the transmission assembly further comprising an output element connected to both prongs and in engagement with the input element so that rotation of the input element results in the output element alternately pushing and pulling each prong so that the prongs move reciprocatingly forward and backward  
20 in opposite directions from one another.

16. The method of claim 15 wherein the input element is a cammed plate connected to an end of the shaft and the output element is a plate in abutting engagement with the cammed plate of the input element.

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17. The method of claim 15 wherein the input element comprises an input gear connected to the shaft for rotation with the shaft and the output element comprises an output gear enmeshed with the input gear but which rotates about an axis generally perpendicular to the axis of the shaft, the output gear being disposed  
30 between and connected to two generally oppositely directed arms, each arm being connected to one of the prongs.

18. The method of claim 17 wherein the shaft is part of a dental drill assembly.

19. A mechanical polishing/flossing device comprising:  
two generally parallel and spaced apart prongs, each prong comprising  
a proximal end connected to a transmission assembly and a distal end connected to an  
end of a floss matrix band that extends between the distal ends of the prongs,  
5 the transmission assembly being connected to the shaft, the shaft being  
connected to a motor for imparting rotation to the shaft about its longitudinal axis,  
the transmission assembly comprising an input element connected to  
the shaft and that rotates with the shaft, the transmission assembly further comprising  
an output element connected to both prongs and in engagement with the input element  
10 so that rotation of the input element results in the output element alternately pushing  
and pulling each prong so that the prongs move reciprocatingly forward and backward  
in opposite directions from one another.

20. The flossing device of claim 19 wherein the input element is a  
15 cammed plate connected to an end of the shaft and the output element is a plate in  
abutting engagement with the cammed plate of the input element.

21. The flossing device of claim 19 wherein the input element  
comprises an input gear connected to the shaft for rotation with the shaft and the  
20 output element comprises an output gear enmeshed with the input gear but which  
rotates about an axis generally perpendicular to the axis of the shaft, the output gear  
being disposed between and connected to two generally oppositely directed arms,  
each arm being connected to one of the prongs.

22. The flossing device of claim 19 wherein the shaft is part of a  
25 dental drill assembly.